

WHAT IS CLAIMED:

1. A process for dispersing fibrous paper stock comprising:  
delivering an aqueous fibrous paper stock;  
pressing some water out of the aqueous fibrous paper stock to form a highly consistent coarse fibrous paper stock;  
introducing the highly consistent coarse fibrous stock into an effective area of a mallet roll having circulating mallets which cooperate with fixed peripheral impact sections, whereby the highly consistent coarse fibrous stock is loosened and distributed;  
transporting the highly consistent fibrous paper stock into a dispersing machine;  
dispersing the highly consistent fibrous paper stock in a dispersing machine.
2. The process in accordance with claim 1, wherein the dispersing machine comprises at least two dispersing fittings with several lines of teeth, the at least two dispersing fittings being arranged so that the several lines of teeth are intermeshed and spaced at a distance from each other, and said process further comprises:  
rotating the at least two dispersing fittings relative to each other.
3. The process in accordance with claim 2, further comprising:  
introducing water steam into the highly consistent fibrous stock while it is located between the dispersing fittings, whereby the highly consistent fibrous stock is heated.
4. The process in accordance with claim 3, wherein the dispersing fittings include a primary dispersing area and a ring shaped heating zone arranged radially inside of the primary dispersing area, and said process comprises:  
introducing the water steam into the ring shaped heating zone.
5. The process in accordance with claim 1, wherein the mallet roll is

essentially horizontally positioned, and said process further comprises:

introducing the fibrous stock into the effective area of the mallet roll from above.

6. The process in accordance with claim 1, wherein a worm extruder assists in the pressing of water out of the aqueous fibrous paper stock.

7. The process in accordance with claim 6, wherein a transport direction in the worm extruder is essentially horizontal and an axis of the mallet roll is essentially horizontal and substantially perpendicular to the worm extruder transport direction.

8. The process in accordance with claim 1, further comprising:  
rotating the mallets at a circumferential speed in a range between about 1 to 5 m/s.

9. The process in accordance with claim 8, further comprising:  
rotating the mallets at a circumferential speed of between about 2 and 4 m/s.

10. The process in accordance with claim 1, further comprising:  
calibrating the highly consistent fibrous stock between impact sections positioned at a distance from each other.

11. The process in accordance with claim 10, further comprising:  
adjusting a maximum amount of calibrated fibrous stock pieces in the longitudinal direction to a size in a range between about 5 to 50 mm.

12. The process in accordance with claim 1, further comprising:  
transferring a specific work amount of less than about 1kWh/t from the mallet roll to the fibrous stock.

13. The process in accordance with claim 1, further comprising:  
dropping the fibrous stock, after passing the mallet roll, into a screw conveyor;  
and

centrally introducing the dropped fibrous stock into the dispersing machine via the screw conveyor.

14. The process in accordance with claim 1, further comprising heating the highly consistent fibrous stock while it is located between the dispersing fittings.

15. The process in accordance with claim 14, further comprising introducing water steam between the dispersing fittings and into the highly consistent fibrous stock.

16. The process in accordance with claim 14, wherein the dispersing fittings include a primary dispersing area and a ring shaped heating zone arranged radially inside of the primary dispersing area, and said process comprises:

introducing the water steam into the ring shaped heating zone to heat the highly consistent fibrous stock.

17. An apparatus for performing a process for dispersing fibrous paper stock, said apparatus comprising:

a worm extruder structured and arranged to create a highly consistent coarse fibrous paper stock;

a distribution device arranged downstream from said worm extruder, relative to a stock transport direction; and

a dispersing machine,

wherein said distribution device comprising:

at least one rotating mallet roll including a plurality of essentially radially extending mallets;

a housing; and

a plurality of impact sections arranged to extend essentially radially inwardly from an interior wall of said housing.

18. The apparatus in accordance with claim 17, wherein said plurality of

mallets and said plurality of impact sections are axially spaced from each other.

19. The apparatus in accordance with claim 17, wherein said mallet roll is essentially horizontally arranged.

20. The apparatus in accordance with claim 17, wherein an outermost diameter of the mallets is in a range of between about 200 - 1000 mm.

21. The apparatus in accordance with claim 17, wherein said impact sections have staff shapes.

22. The apparatus in accordance with claim 17, wherein said impact sections have plate shapes.

23. The apparatus in accordance with claim 17, wherein an axial distance between neighboring mallets is in a range between about 10 and 100 mm.

24. The apparatus in accordance with claim 17, wherein an axial distance between said mallets and said impact sections is in a range between about 5 to 50 mm.

25. The apparatus in accordance with claim 17, wherein a length of said mallet roll with a tolerance of about  $\pm 20\%$  is equivalent to an outer diameter of a press screw of said worm extruder.

26. The apparatus in accordance with claim 17, said dispersing machine comprises at least two dispersing fittings with several lines of teeth mounted for rotation relative to each other; and

said at least two dispersing fittings being arranged so that the several lines of teeth are intermeshed and spaced at a distance from each other.

27. The apparatus in accordance with claim 26, further comprising a steam introducing element arranged to introduce water steam into the highly consistent fibrous stock while it is located between said dispersing fittings.

28. The apparatus in accordance with claim 26, wherein said dispersing fittings include a primary dispersing area and a ring shaped heating zone arranged

P20635.S02

radially inside of said primary dispersing area; and

wherein a steam introducing element is arranged to introduce water steam into said ring shaped heating zone.